

WHAT IS CLAIMED IS:

1. A data protocol for facilitating network topology discovery in a network, the protocol comprising:

5 a source field for providing an identifier of a first node associated with a communication link; and

an echo field for providing an identifier of a second node associated with the communication link, the source field and the echo field both including one or more designations specifying the network resources of the respective first node and second node responsible for provisioning the communication link.

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2. The protocol according to claim 1, wherein the one or more designations include a network address of the node and a facility identifier specifying a port of the node associated with the link.

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3. The protocol according to claim 2, wherein the communication link is created by invoking a service object in an optical link manager module of the first node, a link state of the optical link transitioning from a down state to an initialized state in response to invocation of the service object, the optical link manager writing the designations of the first node into the source field of a first message in response to the link state transitioning to the initialized state, the first message being transmitted from the first node to the second node according to the protocol, the designations of the second node being written into a source field of a second message and the designations of the first node being written into an echo field of the second message upon receipt of the first message by the second node.

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4. The protocol according to claim 3, wherein the link state transitions from the initialized state to an up state if the designations in the source field of the first message match the designations in the echo field of the second message.

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5. The protocol according to claim 3, wherein the service object is a link service object and the link is created by invocation of a create method of the link service object, the link service object executed by the optical link manager module.

5 6. The protocol according to claim 4, wherein the link state transitions to the down state upon invocation of a delete method of the service object.

10 7. The protocol according to claim 4, wherein the link state transitions to the initialized state when the designations in the source field of the first message do not match the designations in the echo field of the second message.

8. The protocol according to claim 1, wherein the first node is an optical transport network node.

15 9. The protocol according to claim 1, wherein the second node is an optical transport network node.

10. The protocol according to claim 1, wherein the network is an optical network.

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11. An optical network operable to provide one or more optical links therein, the optical network including:

a first node operable to terminate an optical link; and

a second node coupled to the first node and operable to terminate the optical link, the first node operable to initiate provisioning of the optical link between the first node and the second node by transmitting an announce message to the second node, the announce message including a source field containing a designation identifying the first node, the second node generating an echo message having a designation identifying the second node written into a source field of the echo message and the designation identifying the first node being written into an echo field of the echo message, the second node transmitting the echo message to the first node.

12. The optical network according to claim 11, wherein the designation identifying the first node includes a network address of the first node and a facility identifier specifying a port of the first node associated with the link, the designation identifying the second node including a network address of the second node and a facility identifier specifying a port of the second node associated with the link.

13. The optical network according to claim 11, further comprising:  
a first node optical link manager module; and

a second node optical link manager module, creation of the optical link being made in response to invocation of a service object in the optical link module of the first node, a link state of the optical link transitioning from a down state to an initialized state in response to invocation of the service object, the announce message being transmitted from the first node to the second node in response to the link state transitioning to the initialized state.

14. The optical network according to claim 13, wherein the link state transitions from the initialized state to an up state when the designation in the announce message identifying the first node matches the designation specified in the echo field of the echo message.

15. The optical network according to claim 13, wherein the service object is a link service object and the link is created by invocation of a create method of the link service object, the link service object executed by the first node optical link manager module.

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16. The optical network according to claim 14, wherein the link state transitions to the down state upon invocation of a delete method of the service object.

17. The optical network according to claim 14, wherein the link state transitions to the initialized state when the designations in the source field of the announce message do not match the designations in the echo field of the echo message.

18. The optical network according to claim 11, wherein the first node is an optical transport network node.

19. The optical network according to claim 11, wherein the second node is an optical transport network node.

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